

1998 ASIP CONFERENCE

FLEETLIFE

Managing the Economic Aspects of ASIP Programs

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Introduction



The Focus

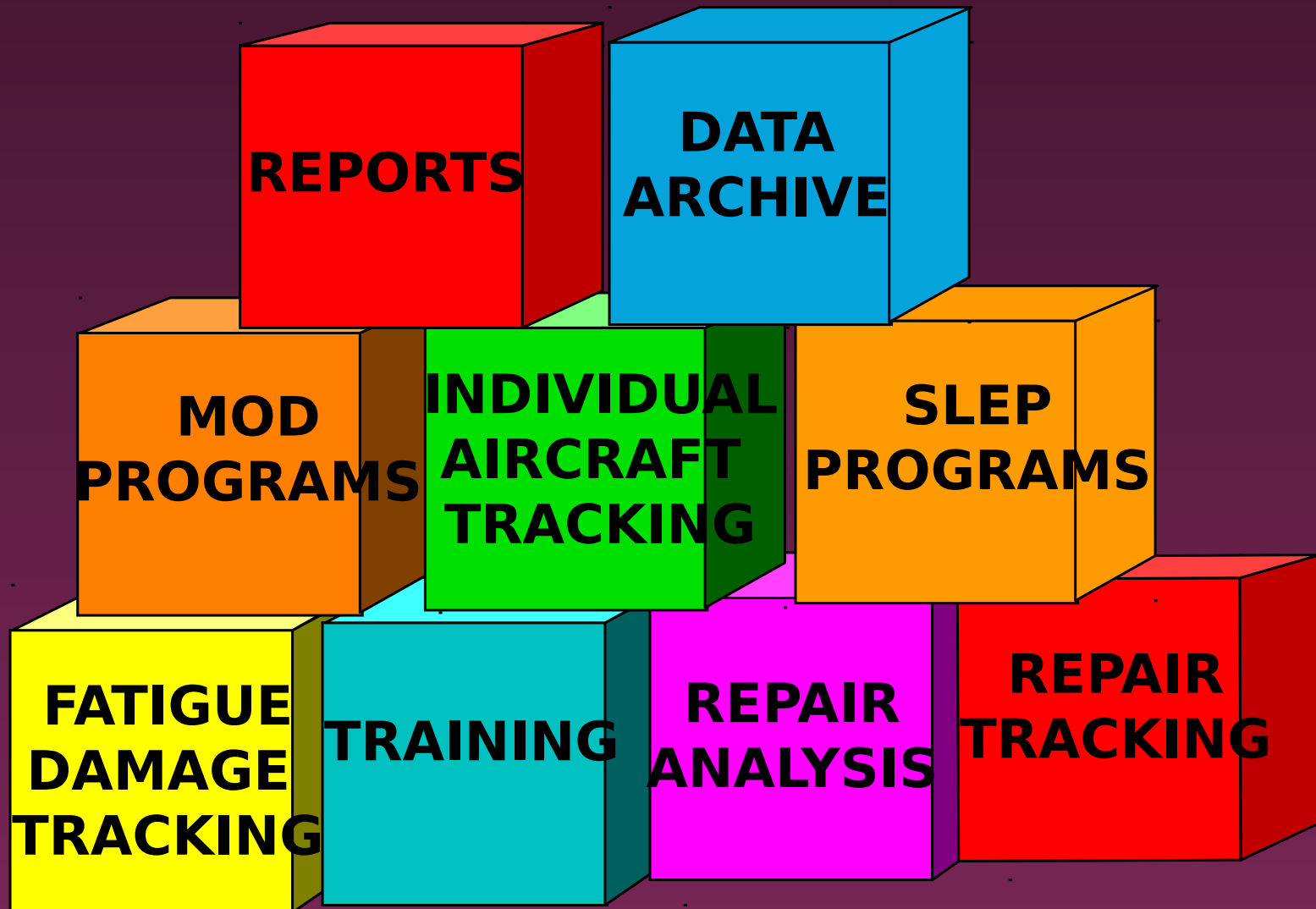
- Managing the Economic Aspects of ASIP Programs



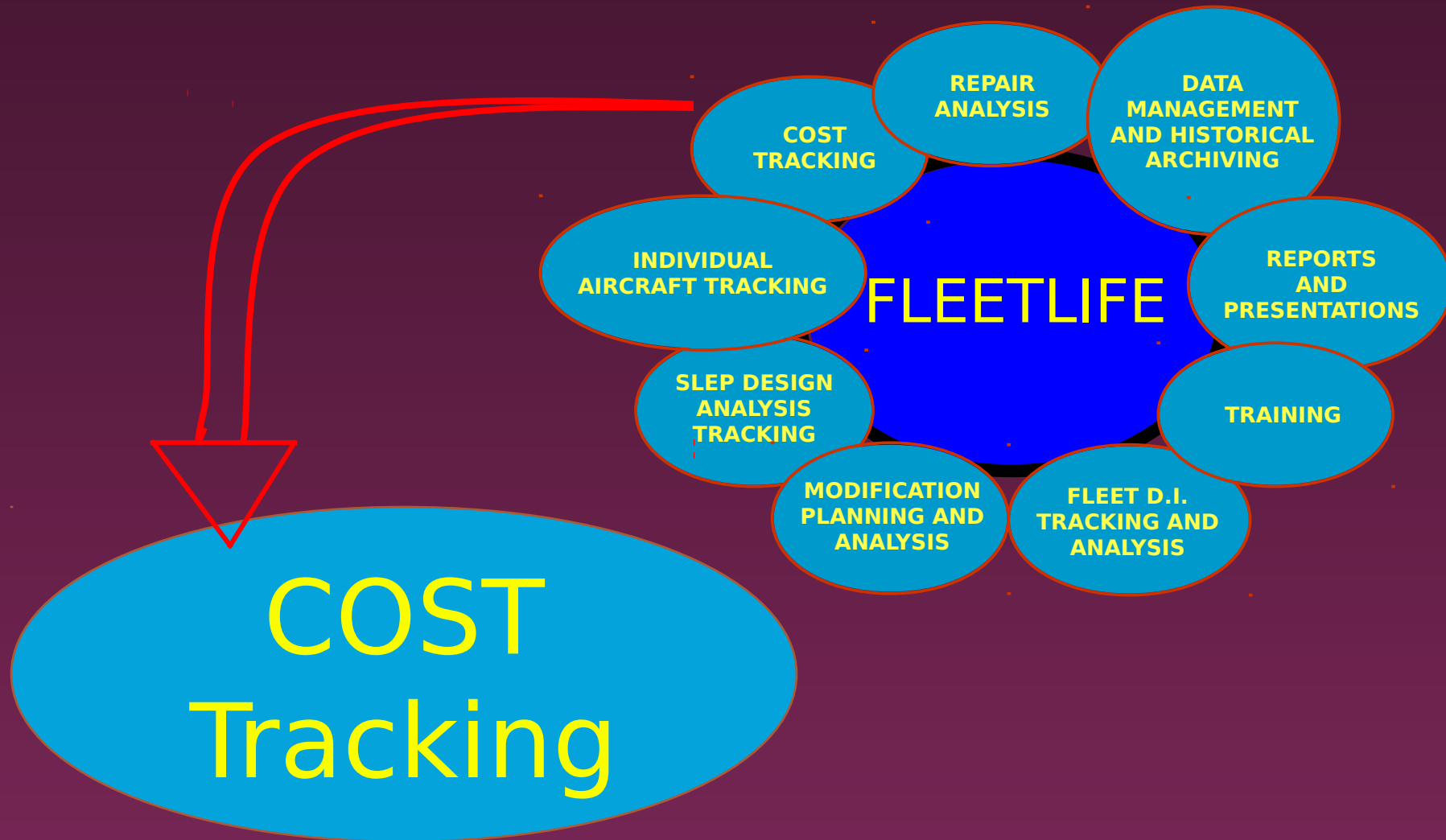
The Topics

- What are the Costs?
- How are these costs determined?
- How do we evaluate the effectiveness?
- Some suggested Concepts
- Wrap-up

FLEETLIFE



Part Of the Total Package



Decision Tree



Economic
Factors

What are the Costs?

- ASIP Directed
 - Inspections
 - Repairs
 - Modifications
- Routine Maintenance
- Special Maintenance
 - Damage Related
 - Corrosion Related
 - Mission Requirement

Partners?

Structural
Integrity



Routine
Maintenance

Determining ASIP Costs

- Change the mindset
- Establish a systematic collection system
- Establish a comprehensive data management system
- Use modern computer tools

Think Economically



Economic
Data



Repair
Tracking

An Approach

- Develop Database Structure
- Develop Graphical Presentation
- Collect Data
- Integrate Existing Databases
- Automate Information Management
- Develop Economic Models

Aircraft Affected

Aircraft Affected		
Analysis	Deficiency	Repair
TAIL_NO	MODEL	CONFIGURATION
162723	AV-8B	Day Attack

Navigation: [Previous] [Next] [First] [Last]

Buttons: Add Open Delete

Ref No.	Fleet	Engineer
LES-70-CP-A-1998	AV-8	W. Gay
Deficiency Type	Eff. Date	Engr. Hours
Heat Damage	04-28-1998	180
Date Created	Main Structure	
04-28-1998	Wing	☐ Fracture Critical

Repair Cost Data

REFERENCE_NO	SPECIALITY_CODE	HOURS	RATE	MATEF

New Edit Delete

Cost Data Filter
☒ Un-Filtered
☐ Filtered by reference number

Cost Totals
TOTAL: \$0

Tail No. 161396	Serial No. 1	Fleet AV-8
Model AV-8B	Configuration Day Attack	Next Major Inspection 01-01-2015

Airframe Hours: 0 **Fatigue Index:** 0

Repair Deficiency

Aircraft Affected	Analysis	Deficiency	Repair
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Description:

Caption

(DBImage1)

Ref No. Fleet Engineer

LES-70-CP-A-1998 AV-8 W. Gay

Deficiency Type Eff. Date Engr. Hours

Heat Damage 04-28-1998 180

Date Created Main Structure

04-28-1998 Wing ☐ Fracture Critical

Repair Instructions

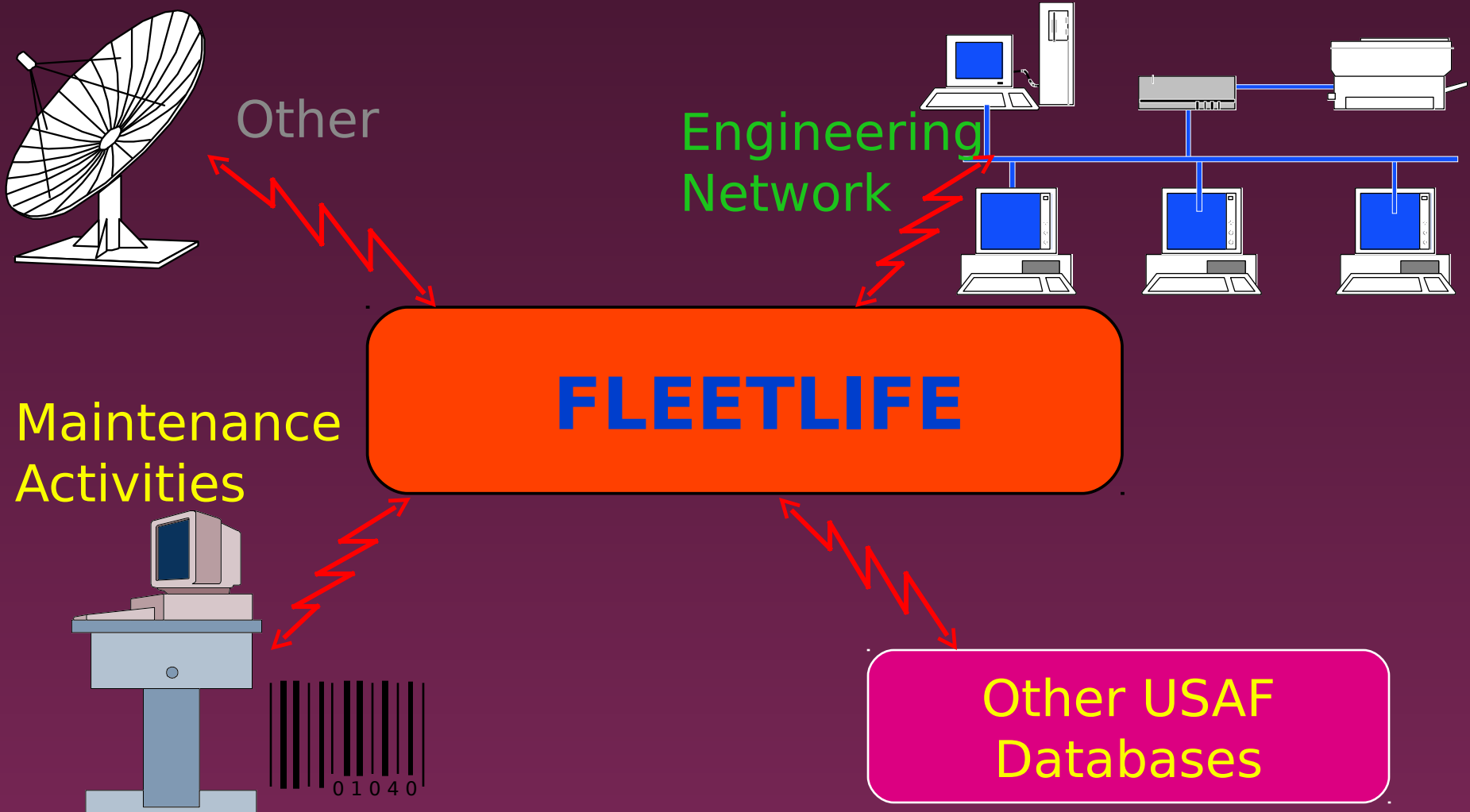
Aircraft Affected	Analysis	Deficiency	Repair
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Instructions:

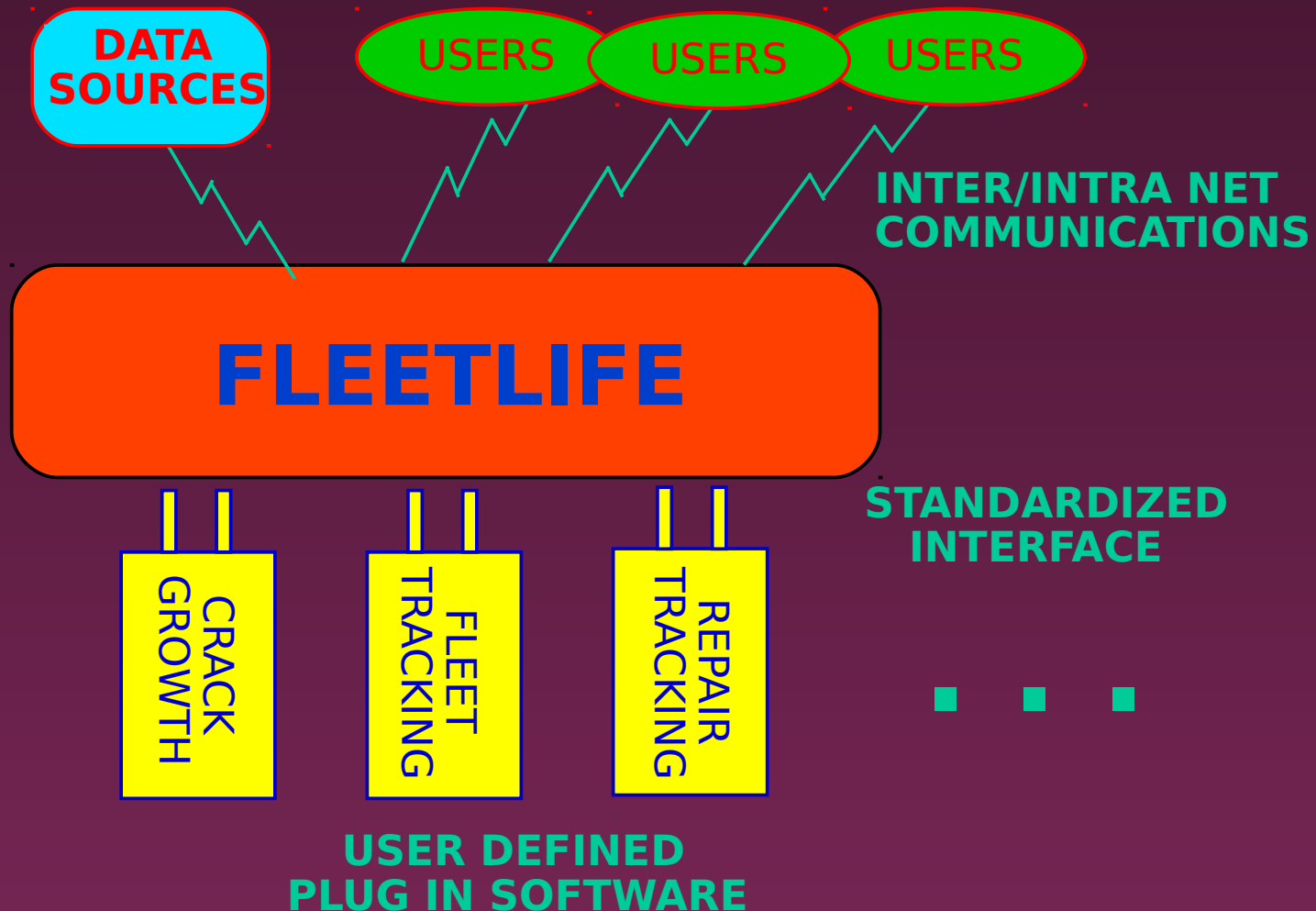
Open

Ref No.	Fleet	Engineer
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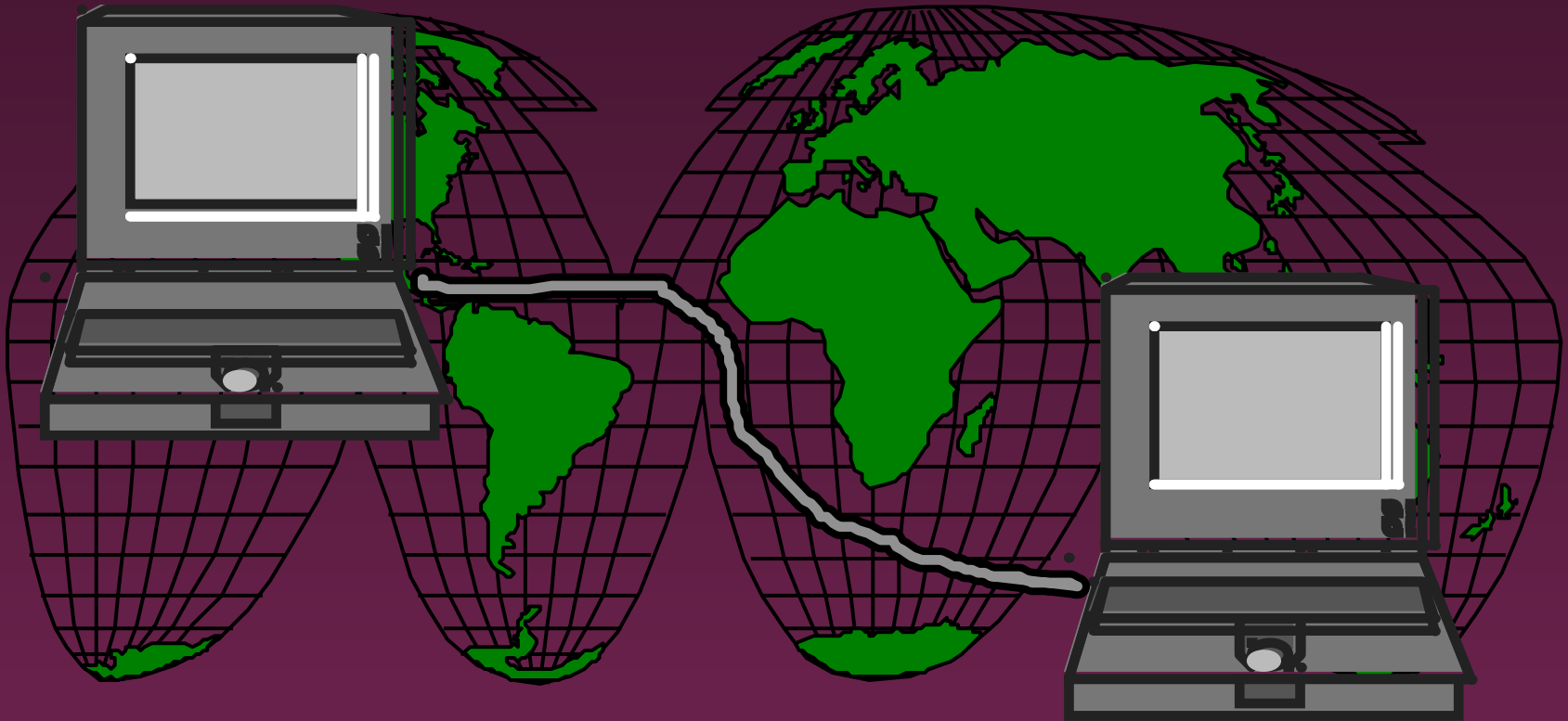
Data Input Methods



System Structure



Worldwide Access



Internet Worldwide
User Access

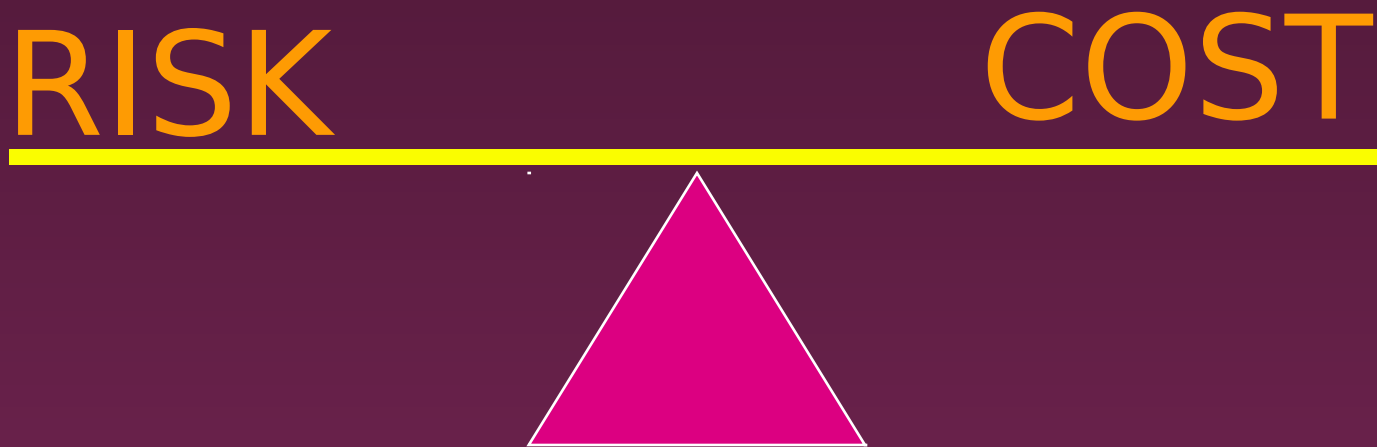
Evaluating the Effectiveness?

- What is my risk?
- Am I at lowest cost to acceptable risk levels?
- Factors to consider
- Decision models

Defining Risk

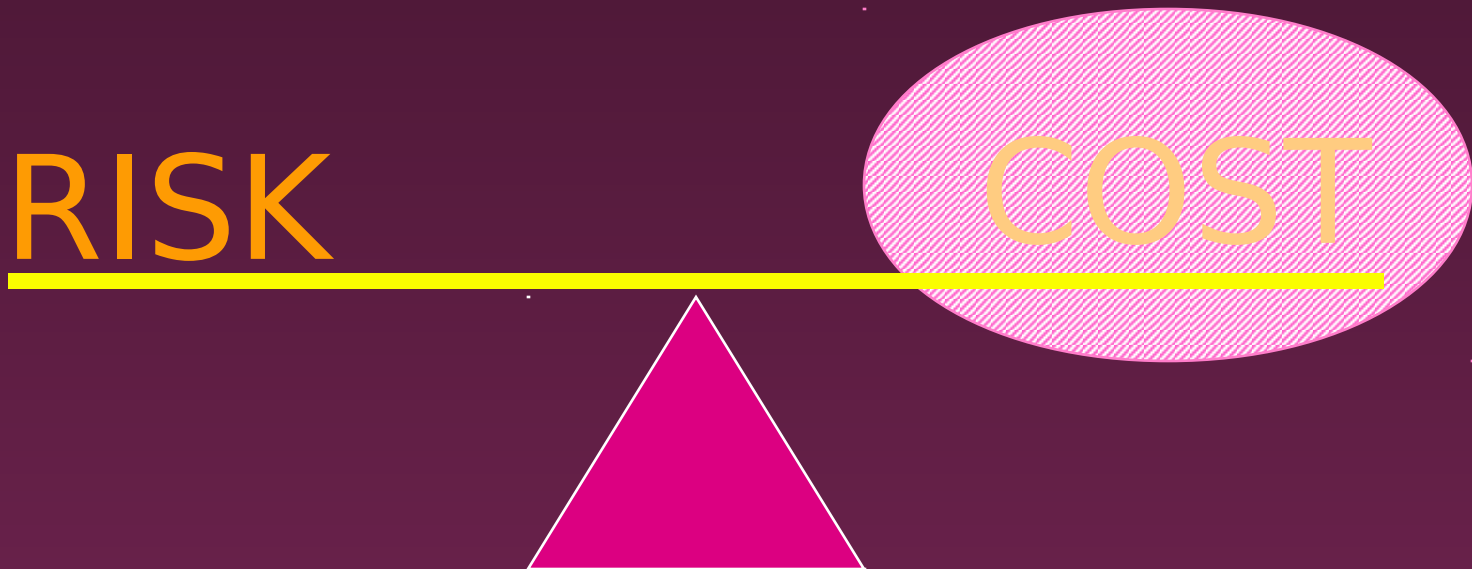
- Probability Methods (PROF)
 - Input Parameters
 - Input Data Requirements
 - Data Collection Integrity
 - Data Quality
- Define an “Acceptable” Risk Level
- Measure Against Risk Level Parameter

Balancing Risk vs. Cost



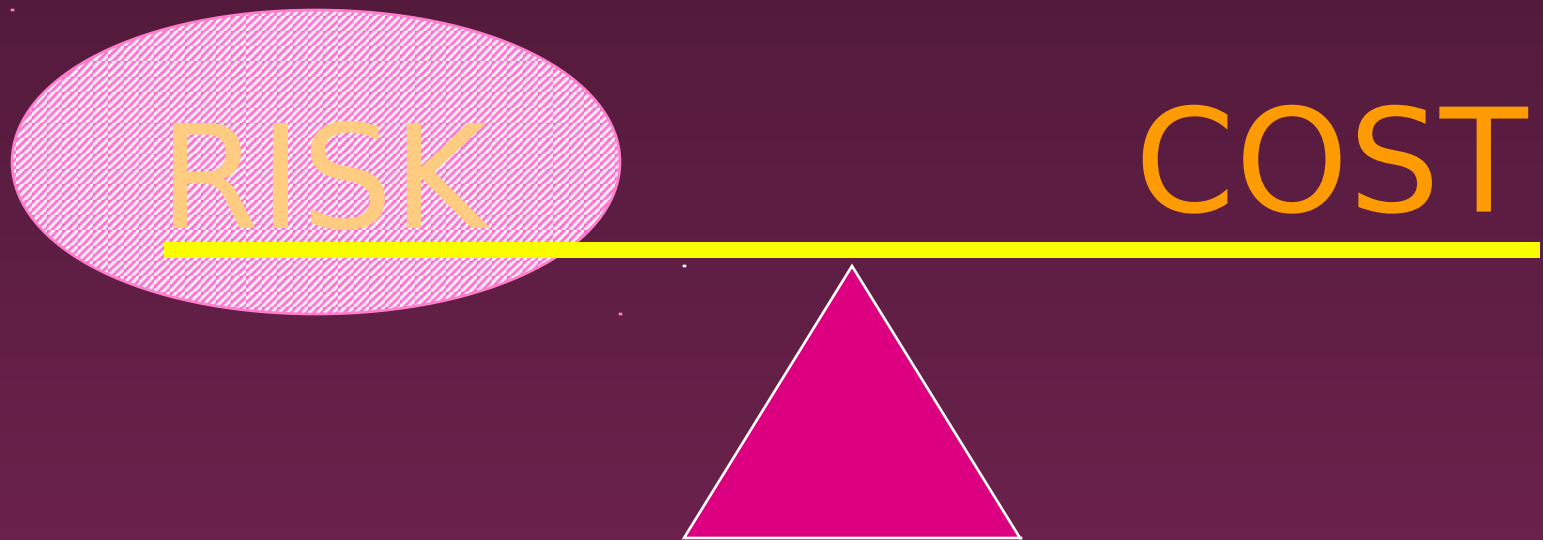
Repair Concept Development

Ignoring Cost



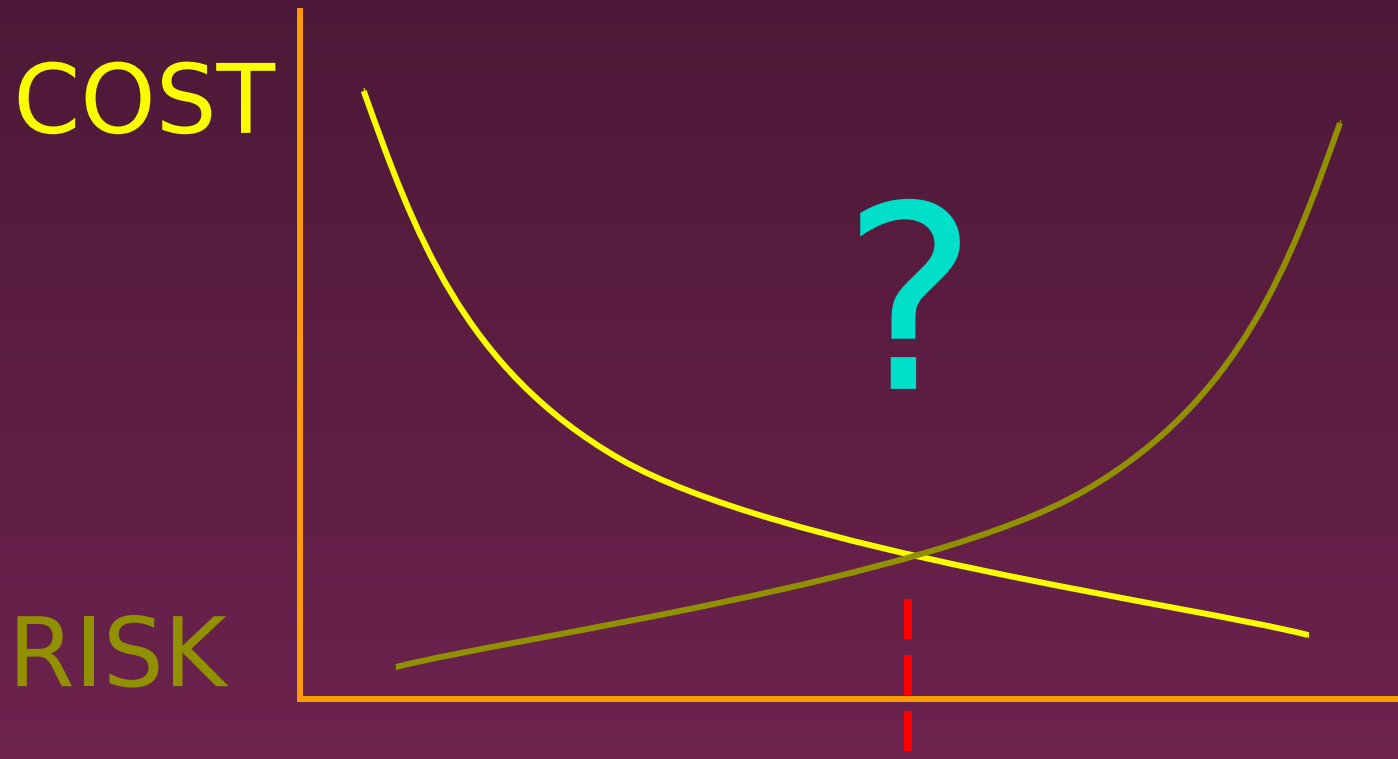
Current Practice?

Ignoring Risk



Dangerous Practice!

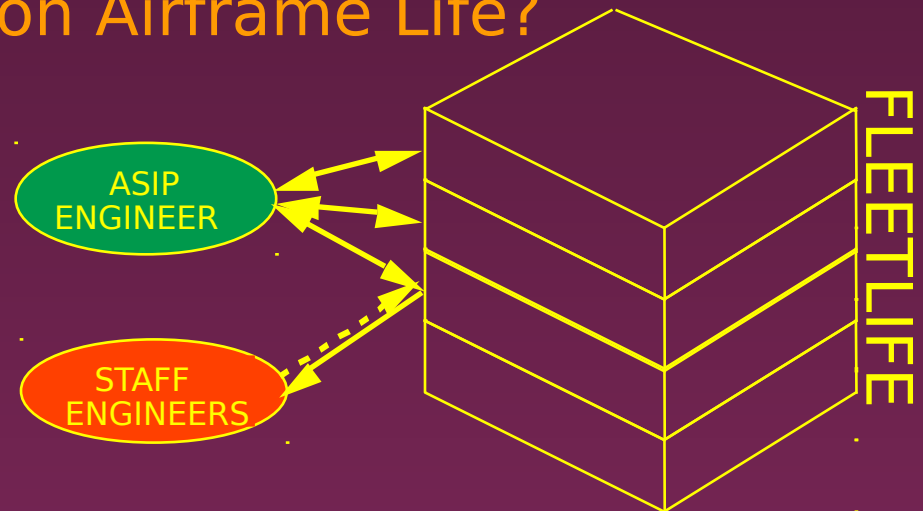
Risk/Cost Tradeoff



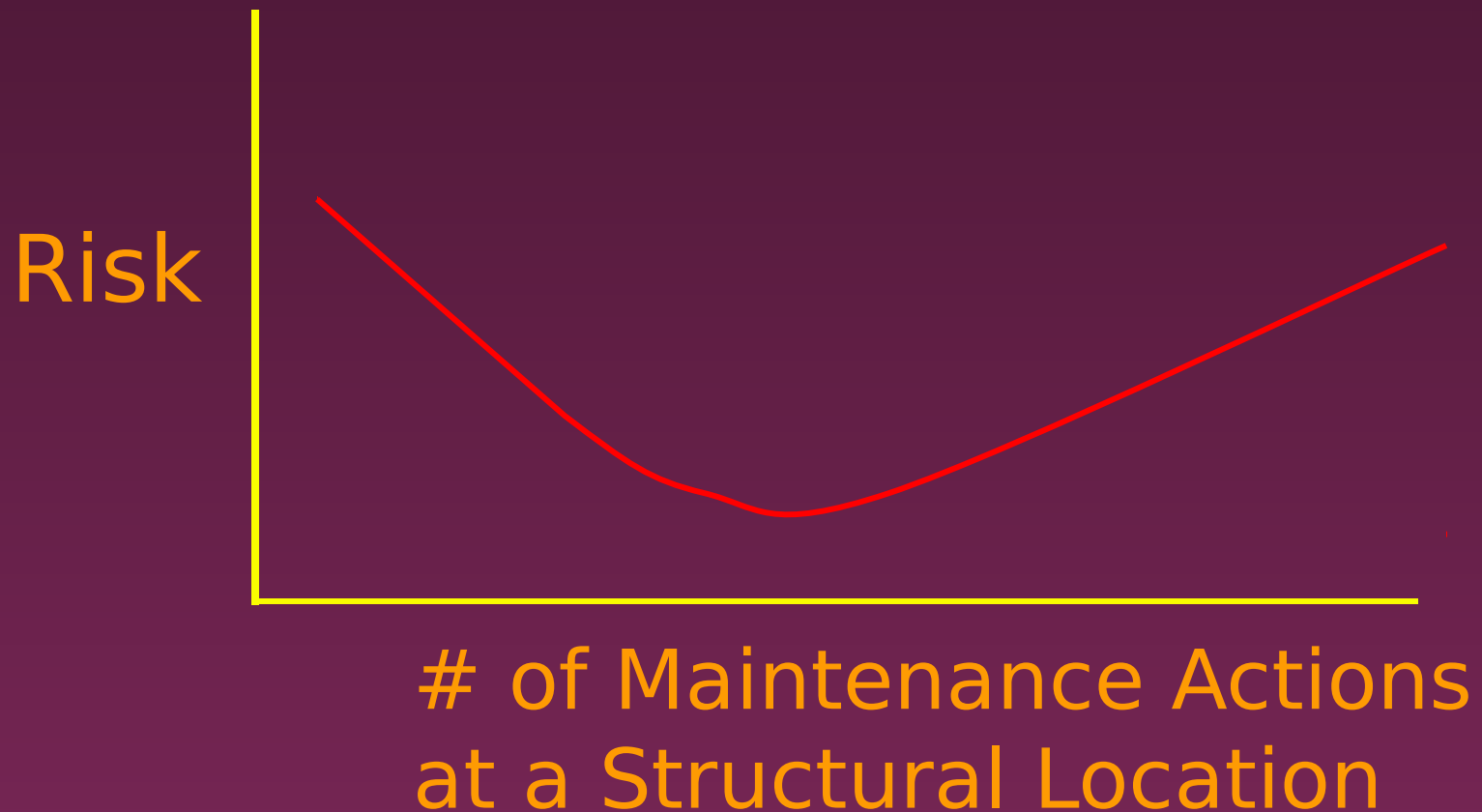
Minimum Cost to Acceptable Risk

Determining Repair Effectiveness

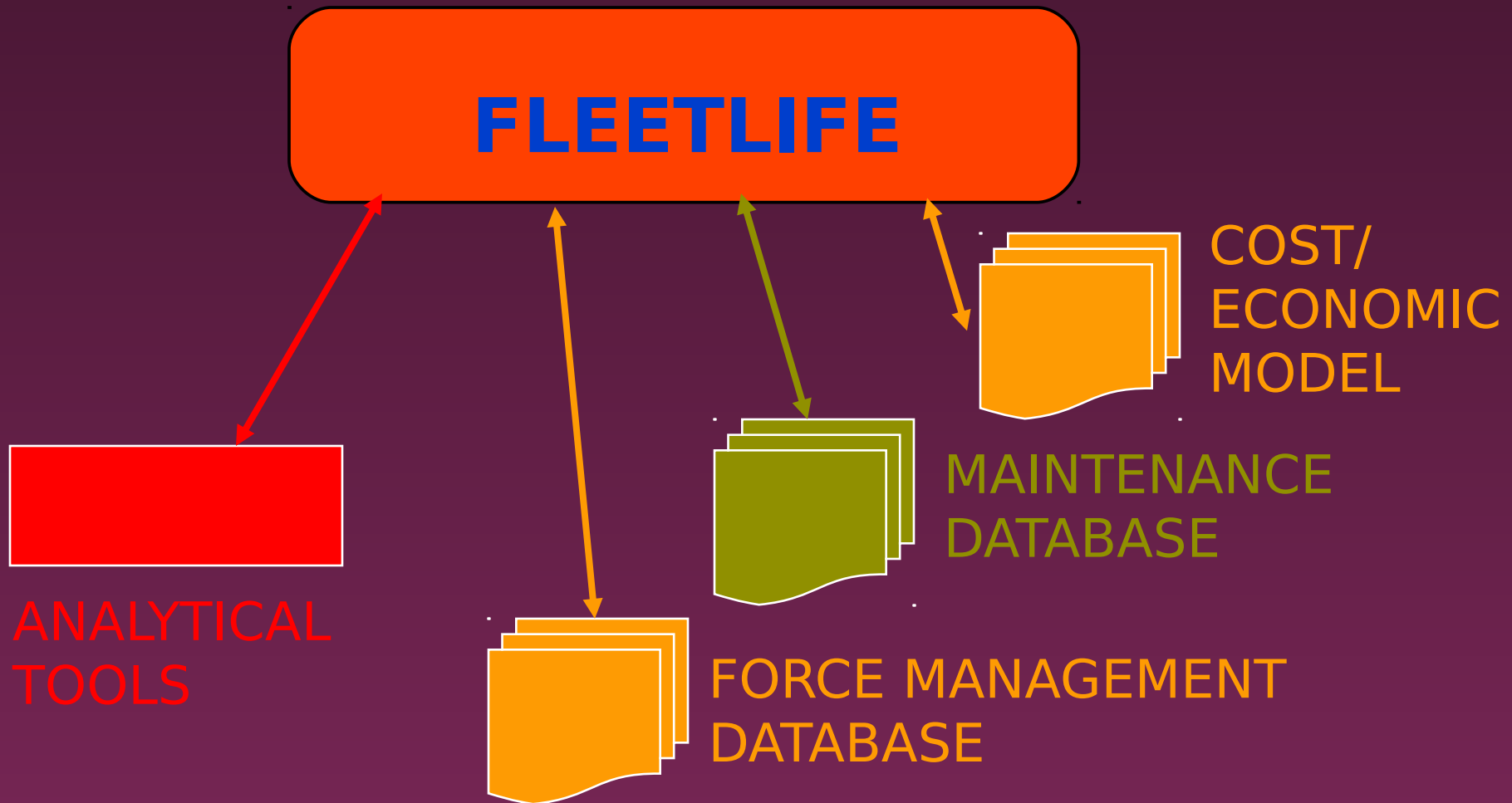
- Determine Repair Life
- Determine Optimum Inspection Interval
- Is the Selected Repair the Lowest Cost?
- How Many Man-hours Expended?
- What is the Impact on Airframe Life?
- ASIP Directed?



One Use of the System



Basic Program Contents



Force Management Database (Historical)

TASK	NOW	PLAN	FUTURE
ACFT/UNIT GEO/ENVIR DATA	X		
FLIGHT LOADS/USAGE	X		
FATIGUE DAMAGE TRACKING	X		
TEST DATA	X		
INSPECTION DATA		X	
IN-SERVICE DATA	X		

Force Management Database (Planning)

TASK	NOW	PLAN	FUTURE
ASIP BROCHURE			X
SLEP PLANS			X
MISSION/USAGE CHANGES			X
WEIGHT CHANGES			X

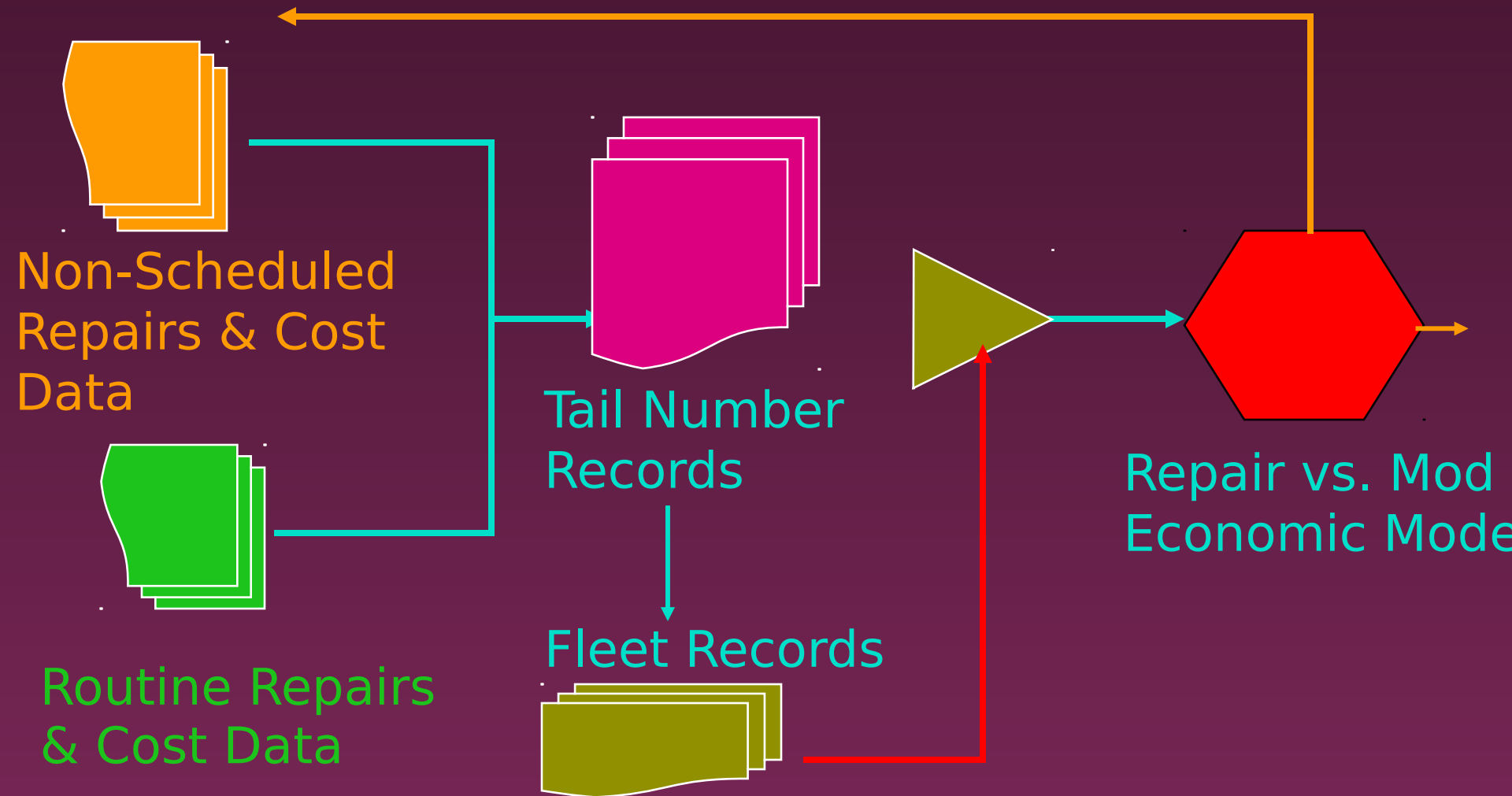
Maintenance Database

TASK	NOW	PLAN	FUTURE
INDIVIDUAL ACFT MAINT HIST	X		
ROUTINE MAINT & INSPECT		X	
HEAVY & SPECIAL MAINT	X		
ELECTRONIC -202 & -107			X
SYST COMP FAILURE RATES			X
MRRB BROCHURE			X

Cost Data & Economic Models

TASK	NOW	PLAN	FUTURE
MAINTENANCE MAN-HOURS	X		
ENGINEERING MAN-HOURS	X		
ASIP MAINT COST DATA	X		
TAIL # / LOCATION COSTS	X		
CORROSION DATA			X
BUSINESS/ECONOMIC MDLS			X

Economic Models



Loss of Military Aircraft Use

- Not Revenue Related
- Peacetime vs. Wartime
- Mission Critical?
- Effect on other battle elements
- Alternative Metrics
 - Minimum Cost
 - Risk vs. Cost
 - Minimum Risk vs. Minimum Cost
 - Defined Risk vs. Minimum Cost
 - Maximum Acceptable Risk vs. Minimum Cost

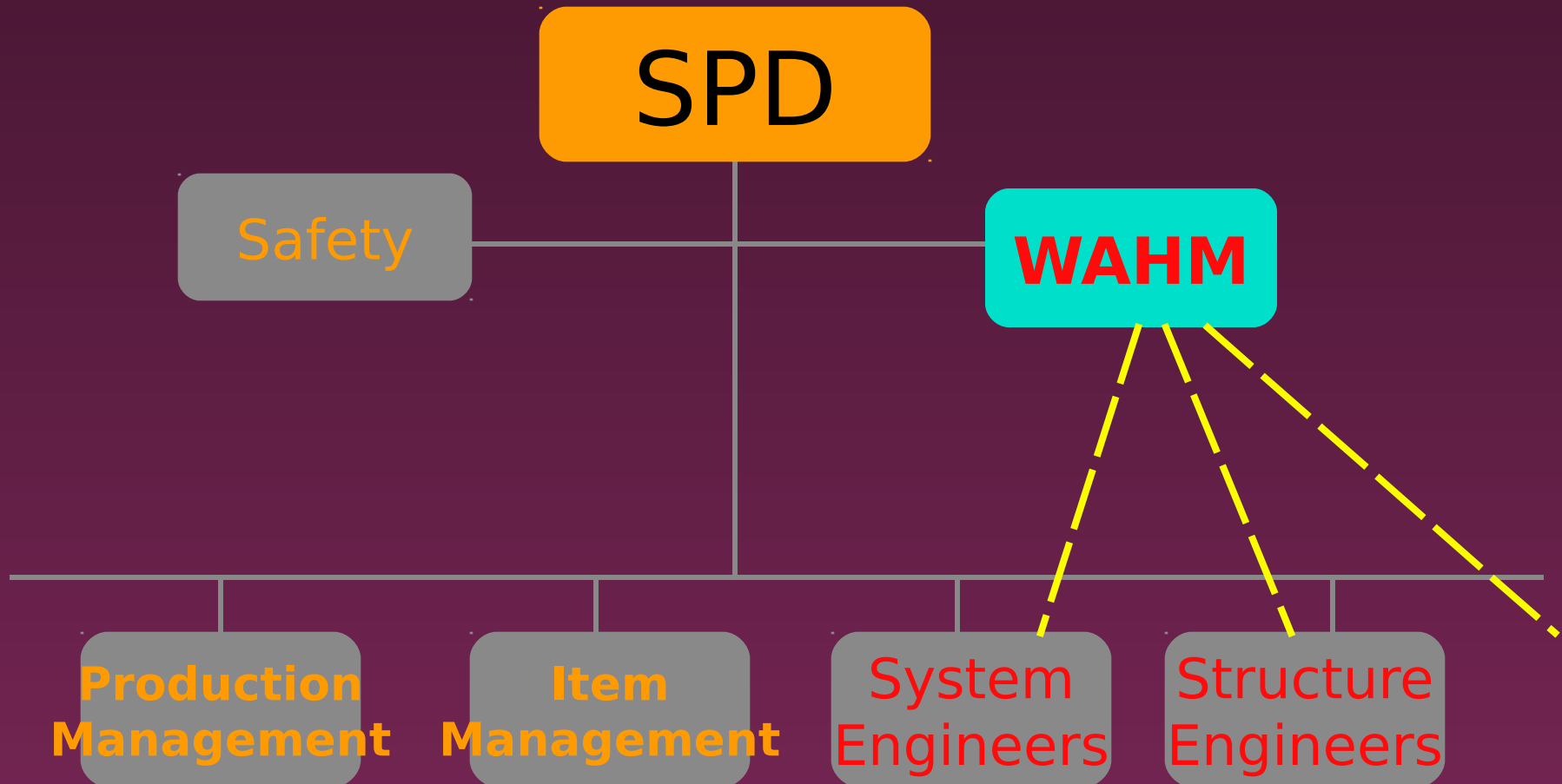
New Thoughts

- Why not consider the aircraft as a whole?
- Why not make a Whole Airplane/Fleet Integrity Manager?

Whole Airplane Health Monitoring

- Primary Structure
- Secondary Structure
- Systems
 - Mechanical
 - Electrical
 - Electronic
 - Mission
- Engines
- Degradation Effects
 - Environment
 - Usage

Whole Airplane/Fleet Manager



CONCLUSIONS

- ASIP managers have a critical and pivotal role affecting the overall life cycle cost of a weapon system.
- ASIP managers need better and more modern tools to carry out this task.
 - Clean up and modernize Current Databases.
 - Use modern input methods such as bar coding and magnetic swipe cards to improve data collection and cost tracking
 - Simplicity and maximum use of automated data transfer operations is a must

<http://www.fleetlife.hill.af.mil>

